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AN ENTOMOLOGICAL CROSS-SECTION OF THE UNITED STATES[1]

By Professor J. CHESTER BRADLEY

CORNELL UNIVERSITY

WELL that was an idea worth thinking about, any how. It had rather an appeal to it, which in its way was quite irresistible. So we did think about it and talked about it and dreamed about it, and assured each other that we were only dreaming, but then "quien sabe"? There was the Buick which one of us very much wanted to have in California with him the next fall and winter, and here were we, three greenhorns, almighty anxious to see the length and breadth of the land between, not swiftly from a car window, but leisurely, day by day, dallying here or there, investigating, collecting, prying into the secrets of the country.

So the idea grew. Our friends were interested, would like to go along. Certainly! We would merely add a Ford, then two, then three, then a trailer. Well! Well! the matter was growing serious, positively the party must not be larger. Then came the dark cloud of war, which left us uncertain whether to go at all, and took the pleasure out of planning. At last it was clear that since some must go to the coast any way, and some awaiting draft could spend the *interim en route,* and that the work of others would not be affected, our plans should "carry on" and so we started.

Who were we? Reader allow us to introduce ourselves. Dr. Albert H. Wright, assistant professor of vertebrate zoology in Cornell University and special agent of the U. S. Bureau of Fisheries. High-sounding titles don't make a zoologist, but no one would accuse him of needing them if they were to watch his dauntless enthusiasm in wading through mudholes after frogs and fish. Mrs. Wright, whose interests are largely botanical and photographic, always managed to chase the glooms away and laugh us all out of the grouches which threatened to settle on us when the Fords misbehaved themselves. Dr. Anne H. Morgan, head of the department of biology at Mt. Holyoke College and May-fly expert. Gracious! how the young

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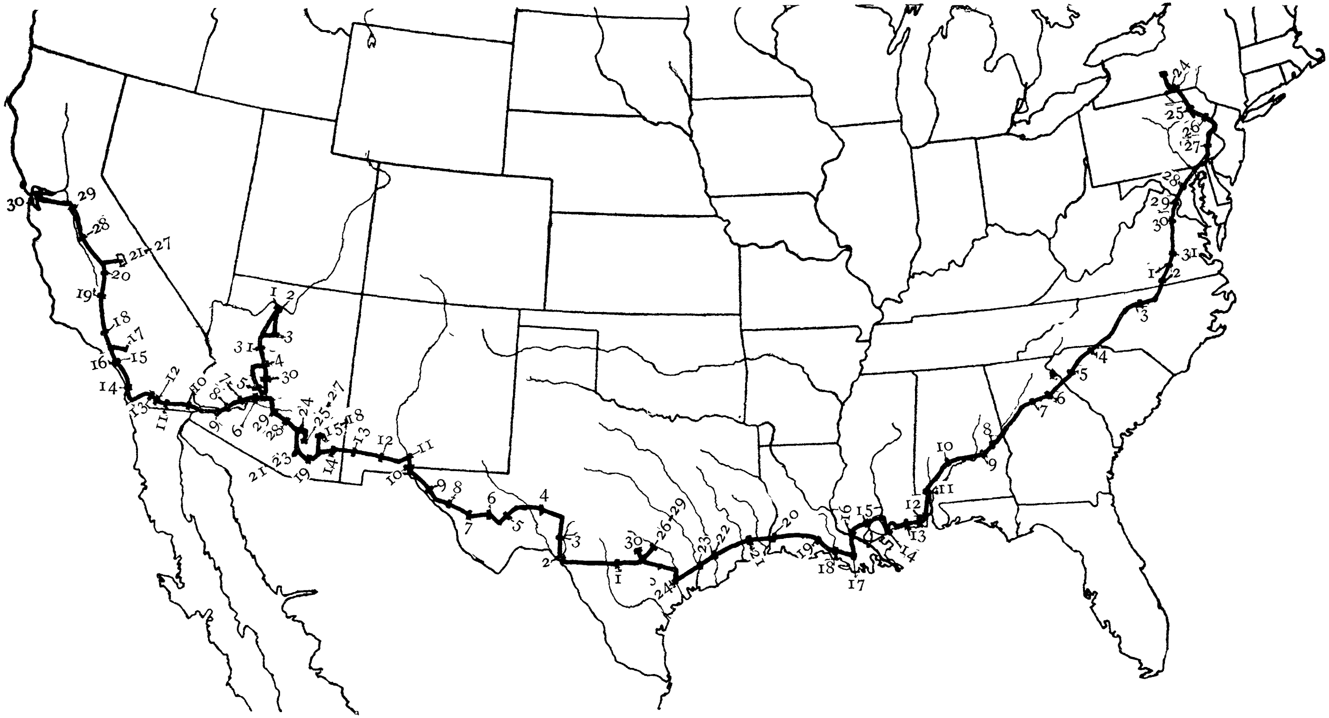
[1] I am indebted to the following persons for notes on the specimens collected during our trip: Dr. W. T. M. Forbes, all the determinations of Lepidoptera, Dr. Bequaert, Hymenoptera; Mr. Knight, Hemiptera; Mr. W. T. Davis, Cicadidæ; Dr. Wright, vertebrates. I am also under obligations to Dr. Munz, Messrs. Shannon and Ralph Wheeler, Mrs. Wright and Prof. E. O. Essig for photographs reproduced; and to Dr. and Mrs. Wright for assistance with the manuscript and proof.



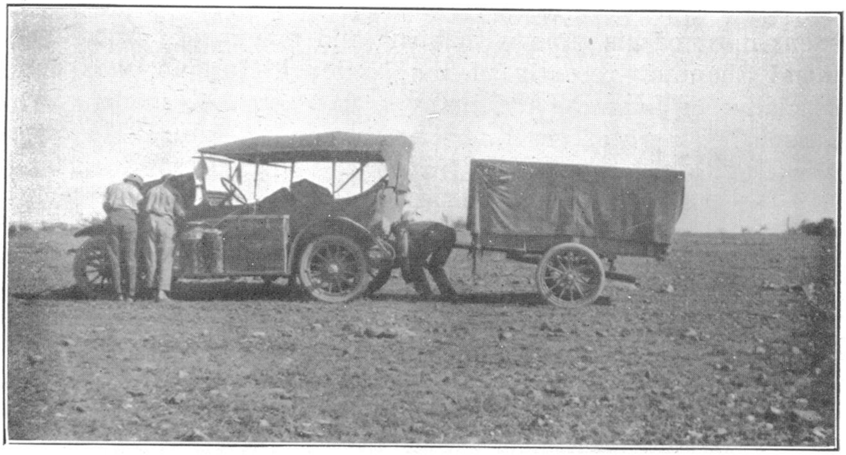
MAP OF ROUTE OF CORNELL UNIVERSITY BIOLOGICAL EXPEDITION, MAY–SEPT, 1917. NIGHT CAMPS ARE EACH NUMBERED TO CORRESPOND TO THE DAY OF THE MONTH, AS INDICATED IN THE ACCOMPANYING TABLE

ROUTE OF CORNELL UNIVERSITY BIOLOGICAL EXPEDITION, MAY–SEPT, 1917. NIGHT CAMPS ARE EACH NUMBERED ON THE MAP TO CORRESPOND TO THE DAY OF THE MONTH, AS INDICATED IN THE FOLLOWING LIST

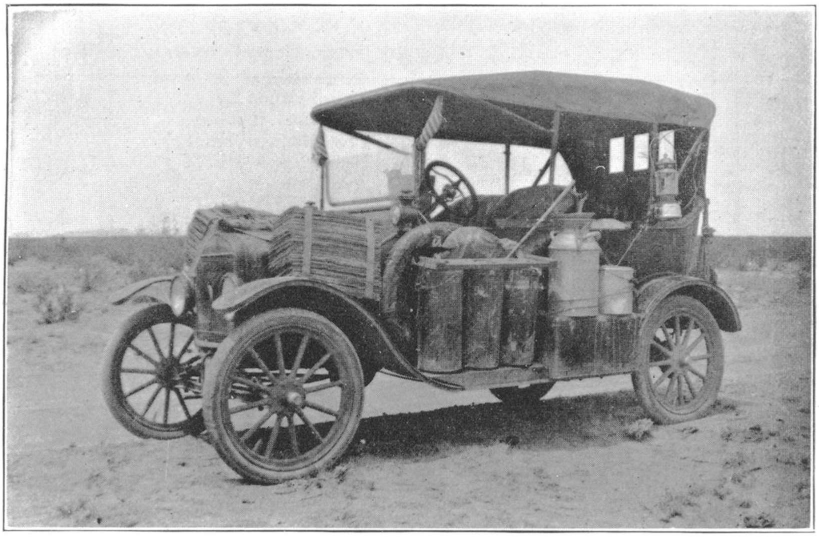
Month	Day of Month	Day of Trip	Miles Travelled	Total Mileage	Town Nearest Night Camp	State
May	24	1	42	42	Owego	N. Y.
"	25	2	90	132	Scranton	Pa.
"	26	3	48	180	Bartonville	"
"	27	4	113	293	Collegeville	"
"	28	5	111	404	Baltimore	Md.
"	29	6	74	478	Alexandria	Va.
"	30	7	59	537	Fredericksburg	"
"	31	8	97	634	Petersburg	"
June	1	9	32	666	Dewitt	"
"	2	10	73	739	Soudan	"
"	3	11	99	838	Gibsonville	N. C.
"	4	12	169	1,007	Broad River	S. C.
"	5	13	101	1,108	Andersonville	"
"	6	14	88	1,196	Athens	Ga.
"	7	15	68	1,264	Stone Mountain	"
"	8	16	144	1,408	Auburn	Ala.
"	9	17	31	1,439	La Place	"
"	10	18	128	1,567	Flatwood	"
"	11	19	73	1,640	Leroy	"
"	12	20	78	1,718	Theodore	"
"	13	21	55	1,773	Biloxi	Miss.
"	14	22	53	1,826	Bay St. Louis	"
"	15	23	91	1,917	Covington	La.
"	16	24	117	2,034	Burnside	"
"	17	25	62	2,096	Schriever	"
"	18	26	52	2,148	Berwick	"
"	19	27	90	2,238	Near Cade	"
"	20	28	87	2,325	Sabine River	"
"	21	29	62	2,387	Devers	Texas
"	22	30	93	2,480	Richmond	"
"	23	31	35	2,515	Wharton	"
"	24	32	70	2,585	Victoria	"
"	25	33	73	2,638	Gilett	"
"	26–29	34–37	85	2,743	New Braunfels	"
"	30	38	54	2,797	Helotes	"
July	1	39	80	2,877	Sabinal	"
"	2	40	117	2,994	Devil's River	"
"	3	41	69	3,063	Juno	"
"	4	42	106	3,169	20 miles west of Sheffield	"
"	5	43	83	3,252	30 miles east of Alpine	"
"	6	44	77	3,329	Davis Mountains	"
"	7	45	60	3,389	Valentine	"
"	8	46	86	3,475	Sierra Blanca	"
"	9	47	63	3,538	Fabens	"
"	10	48	78	3,616	El Paso	"
"	11	49	24	3,640	Mesilla Park	N. M.
"	12	50	68	3,708	7 miles east of Deming	"
"	13	51	71	3,779	Lordsburg	"
"	14	52	56	3 855	Bowie	Ariz.
"	15–18	53–56	58	3,893	Ft. Grant	"
"	19, 20	57, 58	60	3,953	Texas Pass	"
"	21–23	59–61	54	4,123	Tucson	"
"	24	62	52	4,059	Oracle	"
"	25, 26	63, 64	27	4,086	Mt. Lemon	"
"	27	65	0	4,086	Congdon's Mine	"
"	28	66	84	4,170	Florence	"
"	29	67	50	4,220	Near Higley	"
"	30	68	93	4,313	Canon	"
"	31	69	87	4,400	Del Rio	"

Month	Day of Month	Day of Trip	Miles Travelled	Total Mileage	Town Nearest Night Camp	State
Aug.	1, 2	70 71	171	4,571	Grand Cañon	Ariz.
"	3	72	94	4,665	Williams	"
"	4	73	61	4,726	Prescott	"
"	5	74	113	4,839	Beardsley	"
"	6	75	43	4,882	Avondale	"
"	7	76	61	4,943	Gila Bend Mts.	"
"	8	77	56	4,999	20 miles west of Palomas	"
"	9	78	28	5,027	Wellton	"
"	10	79	71	5,098	Sand Hills Colorado Desert	Cal.
"	11	80	61	5,159	Coyote Wells	"
"	12	81	19	5,178	Jacumba	"
"	13	82	28	5,206	Warren's Ranch	"
"	14	83	98	5,304	Torrey Pines	"
"	15, 16	84, 85	68	5,372	Laguna	"
"	17	86	62	5,434	Claremont	"
"	18	87	77	5,511	Saugus	"
"	19	88	115	5,626	Bakersfield	"
"	20	89	93	5,719	Lindsay	"
"	21	90	60	5,779	Giant Forest	"
"	22-26	91-95	0		Alta Meadow	"
"	27	96	0		Giant Forest	"
"	28	97	99	5,878	Fowler	"
"	29	98	118	5,993	Ripon	"
"	30	99	98	6,094	Berkeley	"

ladies at the college would have stared to have seen their revered professor after May flies, dressed in—but there, I must introduce Professor George B. Upton, of the engineering college, who was the chief of staff of our mechanical crew, and whose zoological interests ran to ornithology and shooting lizards. Mr. Harry H. Knight, hemipterist and especially keen



"EZRA CORNELL" AND THE TRAILER. On to the left running board of the Buick we had built a large metal box in which we carried articles likely to be needed during the day, and especially the noon-time lunch, thereby avoiding the necessity of unpacking the trailer en route. Forward of it, on the running board, is a five-gallon can for reserve gasoline, and a ten-gallon water can. After two experiences with broken springs, we carried the piece of scantling beneath the trailer to use in place of a broken spring if occasion arose.

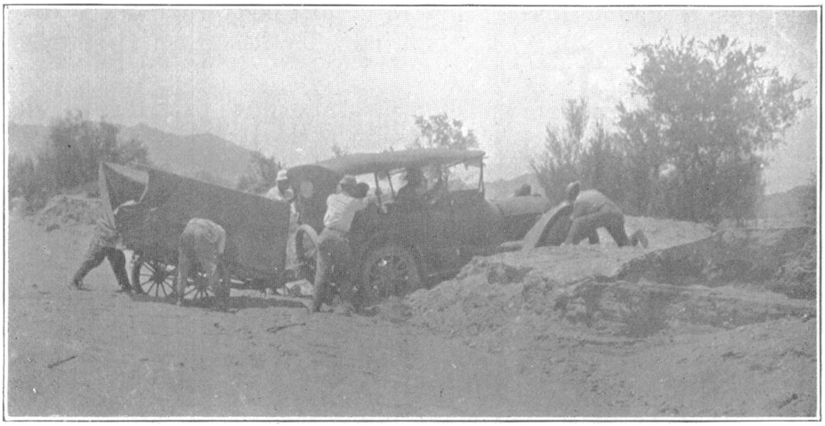


"THE JOHN HARVARD." The plant presses strung across the radiators were a source of curiosity to those whom we met, but the plants dried splendidly in such a place. Two of the cans carried water, one gasoline, and one formaldehyde for preserving reptiles. The gasoline pressure lantern, when used at night, gave a very brilliant illumination, for making bird skins, putting up specimens, etc.

for Capsidæ, was our second mechanician and Ford driver. Dr. Philip Munz, really a dragon-fly man, devoted his time almost entirely to collecting plants. We were all very glad to have a botanist along, as it gave us an opportunity to learn something of the flora that we should otherwise scarcely have had time for. Mr. R. N. Lobdell also collected plants, but spent most of his time with birds and mammals. Mr. Raymond Shannon, recently of the National Museum, was our specialist in Diptera, and many a fine catch he made. Dr. Joseph Bequaert, of the American Museum of Natural History, was also dipterist enough to fraternize with Shannon in gloating over their good finds, but Dr. Bequaert is more particularly an hymenopterist. He, with Dr. Wheeler and the writer made a trio of three Hymenoptera fiends, and how we did catch the ants and bees and wasps! Especially Dr. Bequaert, who it seemed was out and catching some rare specimen every time we stopped to read a road sign. Dr. William Morton Wheeler needs no introduction to entomological readers. It is our one regret that he and his son Ralph were not able to join us until we reached El Paso. Paul Needham collected dragon-flies and Neuroptera to send to his father, Dr. J. G. Needham, but his own interest was in butterflies.

It was our plan to camp out at all points, and this plan, I may say, was rigidly adhered to. But it increased our baggage difficulties. It was no easy matter to provide for carrying thirteen people with their personal baggage, camping outfit, garage supplies, collecting outfits and provisions in two Fords and a Buick even with a good big trailer to help out. We built large running board boxes and used every spare inch of space, shipped much goods ahead, and still were overloaded. The third day out we had an "elimination" party. We shipped back half a trailer-load of baggage, shipped a great deal forward, and still were overloaded. Little by little we eliminated the unessentials until gradually we had a reasonable load. Meanwhile we were gaining rapidly in experience and systematizing our camp life, our work and our packing.

We left Ithaca on the twenty-fourth of May, headed south. The weather was still cold, raw and disagreeable. The first night camp was along the Susquehanna River near Owego. Crossing the Pocono Mountains and down through Allentown and Valley Forge, we arrived at West Chester, Pennsylvania, in a pouring rain. In Maryland we found the trees in full leaf and bade good-bye to bad weather with the last real hard rain that we were destined to see for a long time. Near Baltimore, Mr. Knight found many specimens of a tingid, *Corythuca ulmi* Osborn and Drake (ident. by Drake) on the leaves of *Ulmus fulvus*. At Washington we were joined for a day by Mr. Francis Harper, of the Biological Survey, who took us to a most delightful camping place near Alexandria. With the north behind us and good weather at hand, we felt that our trip had now really commenced, and for the first time were able to do

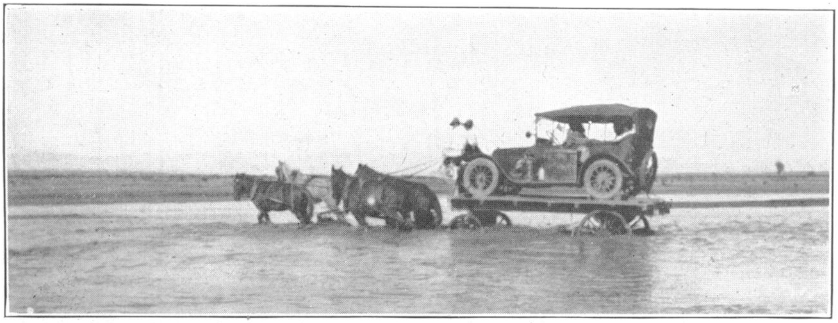


A Sandy Wash in the Yuma Desert near Wellton. The car is not, as might appear, taking a cross country jaunt, but is on the main New Orleans to San Diego auto road.

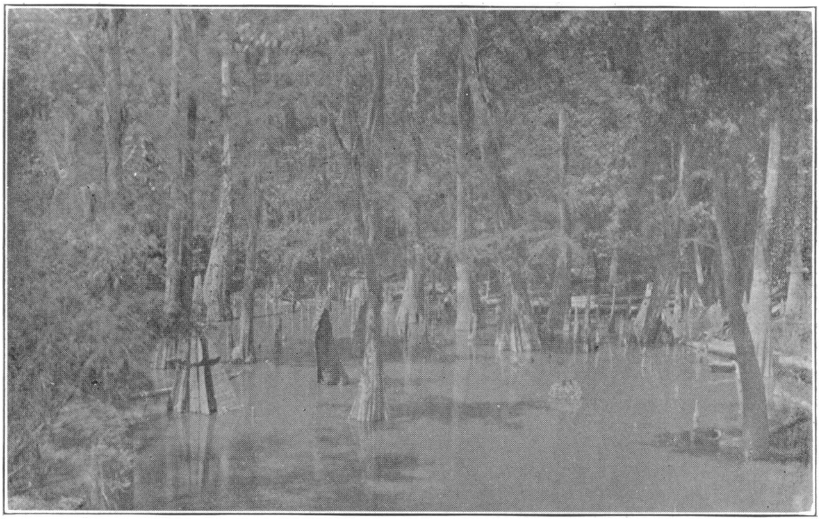
some real collecting. As we were seriously behind our schedule, however, we did not then, nor for a long time thereafter, feel free to linger where the country appealed to us, but were always under the necessity of hurrying on. It was from the start our plan to make a quick trip as far as New Orleans in order to have the more leisure beyond.

I had devised a trap lantern to work with the spot-light of the Buick car. It consisted of a cylinder of tin which fitted on to the spot-light, and the forward end of which was closed by a funnel of celluloid, with a two-inch opening through which the insects could pass into the chamber in front of the light. This chamber was connected with a very strong cyanide jar, made of a pint mason jar, which could be unscrewed from beneath the trap. I put this trap into operation first at Alexandria with very gratifying results. Thereafter I burned it nearly every night throughout the rest of the summer, reaping a harvest of the most astonishing abundance and variety, not only of Lepidoptera but also of Diptera and Coleoptera, and later of nocturnal Mutillidæ, which was what I was chiefly after. The Lepidoptera catch was so good and in such perfect condition, that I devoted to them all possible attention, spending often an hour or two of each morning in pinning them up, and am glad to say they reached the laboratory in fine shape. At present Dr. Forbes is engaged in studying them, and I have enthusiastic reports about them. Our first night's operation of the trap lantern, shining among the bushes on the edge of an open grove of young trees on a grassy knoll, yielded the very striking pink and yellow pyraustid, *Diasemia roseopennalis,* a far from common insect; the rare noctuid *Caradrina tarda* Guenée, and a good series of the recently described *Perimede particornella.*

Between Alexandria and Fredericksburg we passed through



CROSSING THE GILA RIVER AT FLORENCE, ARIZONA.

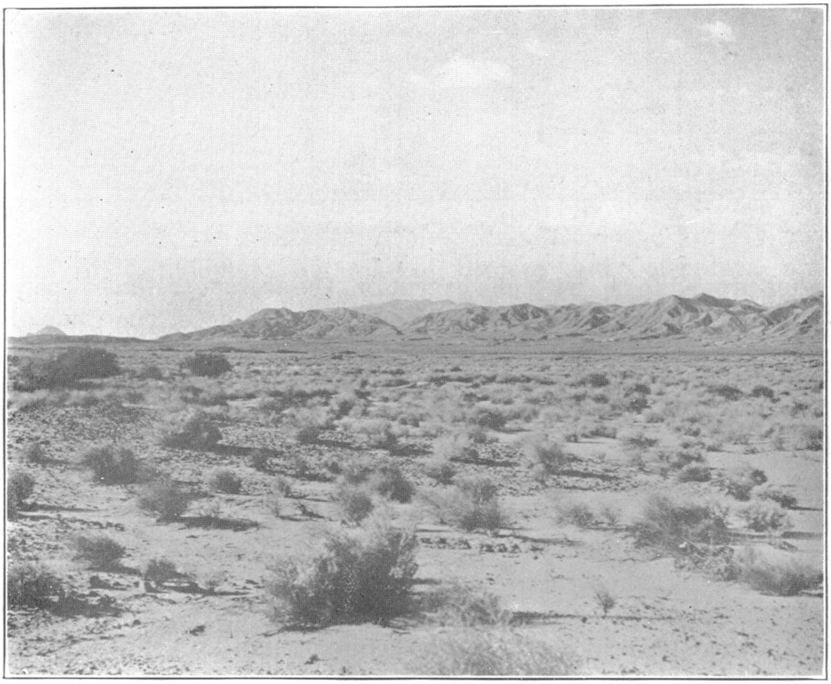


A Muddy Road through the Chopawamsic Swamp in Virginia.

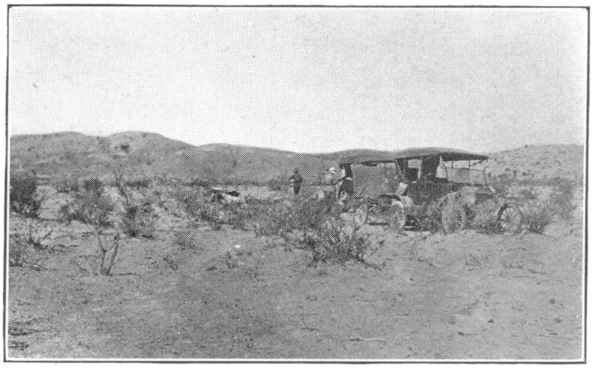
what proved to be, with one exception, the worst stretch of road between the Atlantic and Pacific. It was the notorious Chopawamsic Swamp near Occoquan, a stigma upon the fair name of Virginia. That such a mudhole should be tolerated within a day's ride of our national capital, blocking the main, almost the only, highway between north and south would be unbelievable if it were not so well known. While native harpies stood around eyeing us and chewing, ready with horses and tackle to pull us through for a goodly fee, we worked and sweated, pulling, pushing, shoveling, urging, broke a spring on the Buick, but finally got through and what is more, helped several others to get through, which made us quite unpopular with the natives. Females of *Vespa carolina* were common at the edge of the woods, searching for a nesting site. No workers were seen. At Fredericksburg Knight found *Corythuca arcuata* Say (identified by Drake) on oak. The trap lantern yielded, among other things, the uncommon noctuid *Ulolonche modesta* Morrison, the only eastern species of its genus.

The first of June found us in Petersburg. Amongst the trap lantern catch at this place appeared *Tetanolita mynesalis* Walker, and *T. floridana,* interesting noctuids of the subfamily Hypeninæ; *Ozarba æria* (a noctuid), the rare geometer *Priocycla deçoloraria* Hulst, which was not represented in the National Museum collection at the time of publication of Dyar's list, the Crambid, *Diatræa zeacolella,* and the brilliant nolid, *Nigetia formosalis.*

Dr. Bequaert and I put in our best collecting these days at the noon stops for lunch, but the time available was little. On June 2, at South Hill, Virginia, were numerous bees in the flowers of *Senecio malli.* A shower near Gibsonville, North Carolina, on the following day was the last rain encountered until we reached western Texas. The country between had long been suffering severe drought, and nearly all garden truck was utterly ruined. This made difficult the purchase of fresh fruit and vegetables upon which we had been counting. A like difficutly in obtaining milk was a source of continual amazement and disgust to those of us who were not used to southern ways. These members of our party were furnished a never-ending source of amusement in the open interest and undisguised curiosity in regard to our party manifested whenever we happened to stop. Although we were following the advertised lines of various auto "highways," nothing seemed to be more novel to the citizenry than transcontinental autoists. At each halt, especially in small towns, we were quickly surrounded by a curious but good-natured throng, who naïvely put to us whatever questions happened to occur to them, passed

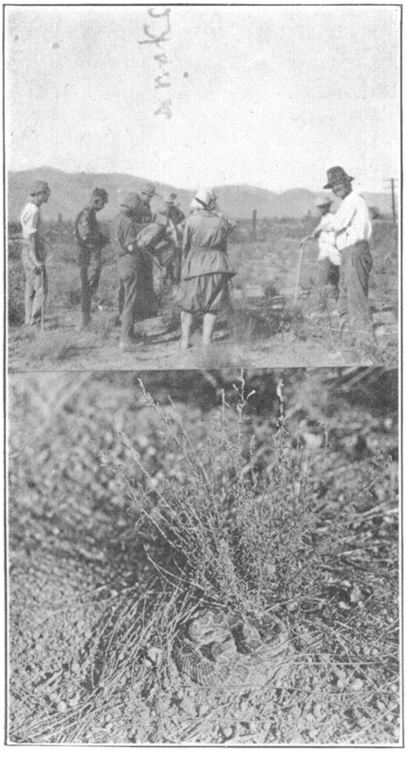


THE COLORADO DESERT AT COYOTE WELLS, CALIFORNIA. Looking southward into Mexico, from very near the International Boundary. The mountains are the Coast Range and form the western boundary of the desert.



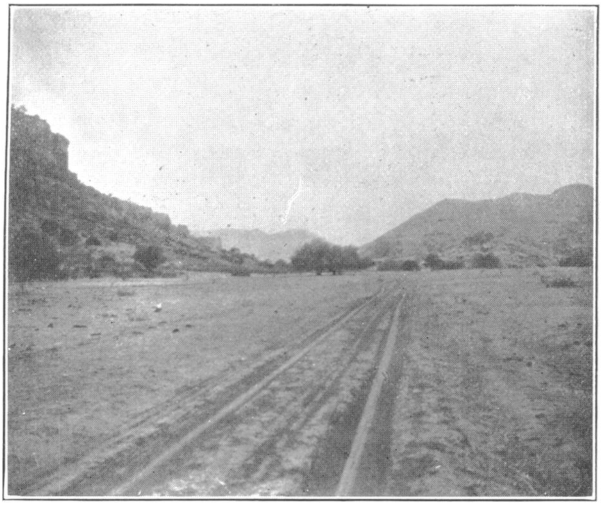
Camp in the Desert near Sheffield, Texas. At night we would drive a short way from the road, and camp without further formality than to spread our blankets.

critical judgment upon our outfit and cars, and took keen delight in commenting to each other upon their probable sensations, if they were to take such a trip as ours. Net in hand, I was one day attentively regarding a bush along the road, when a lady passed, escorted by a gentleman. Her interest was all in what I was doing. I could hear her words, "My curiosity is getting the better of me, Jim! My curiosity *is* getting the better of me, Jim! My curiosity IS getting the *better* of me." But evidently she came off victorious, for strange to say they did not stop.



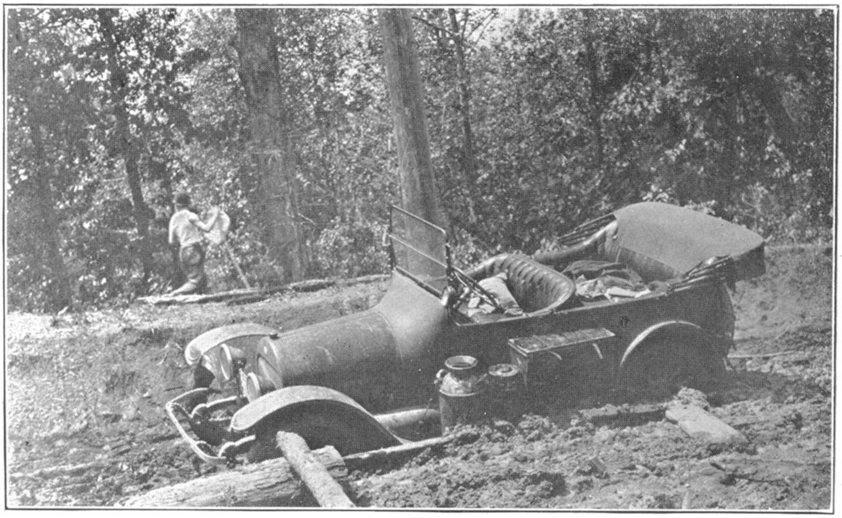
Photographing a Rattler at Bowie, Arizona, and the snake.

Our road led through Greensboro and Charlotte, North Carolina, Blacksburg and Spartansburg, South Carolina, into Georgia. *Raphiptera minimella,* a crambid, appeared in the trap lantern catch near Anderson, South Carolina. At Athens, Georgia, we were most hospitably entertained by Dr. J. M. Reade, professor of botany at the university, who accompanied us to Stone Mountain. Here the writer felt at



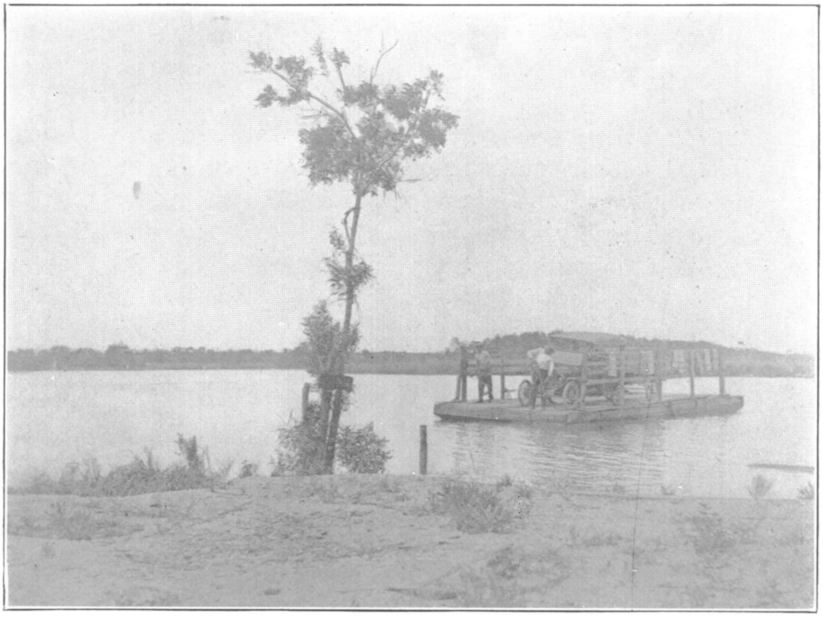
THE ENDLESS ROAD. Entering Musquiz Cañon in the Davis Mountains, Texas.

home, for it is to him an old and cherished collecting ground. On the bare rocks dwell a very interesting grasshopper, *Trimerotropis saxatilis* MacNeill, closely imitating the color of the rocks, even speckled with the green of the lichens with which the rocks are covered. The imposing spectacle of the north face of the mountain, like a huge Zeppelin at rest, a mass of bare granite, held a new interest, for workmen had started the heroic bas-relief figures of confederate heroes that are to cover it.



IN THE CATALINA MOUNTAINS NORTH OF TUCSON, ARIZONA, the autos yielded their load to slowly plodding burros. "Desert Canaries," the prospectors call them.

For night collecting, in addition to the trap light which I have described, we very generally made use of another device, the idea for which was derived from an article by H. S. Barber in the *Proceedings* of the Entomological Society of Washington (Vol. 13, pp. 72–73). It consisted of a tent of cheesecloth, four feet high, stretched over a pyramidal frame of eight wires, which could be taken apart and packed in a bundle. Four more wires formed an inner pyramid, two feet in height, which supported an acetylene burner, connected by a rubber hose with the prestolite tank of one of the Fords. The tent could be set up in a favorable situation, and never failed to draw a varied assortment of flies, moths, Hemiptera, Coleoptera, antlions, some grasshoppers, male ants, an occasional cicada, etc. Later on, in the west, it brought innumerable males of *Brachycistis* and *Chyphotes* (Myrmosidæ) and of *Photopsis* (Mutillidæ). It proved a very popular evening pastime to sit around this tent and pick off rarities. In the desert countries wind scorpions (Solpugida) were always to be found scurrying around it. Sometimes after an evening in which the insects were very numerous, we would turn the tent inside out and crowd it into a large cyanide can. Then after the catch was stilled what quantities of things were to be found! Of course



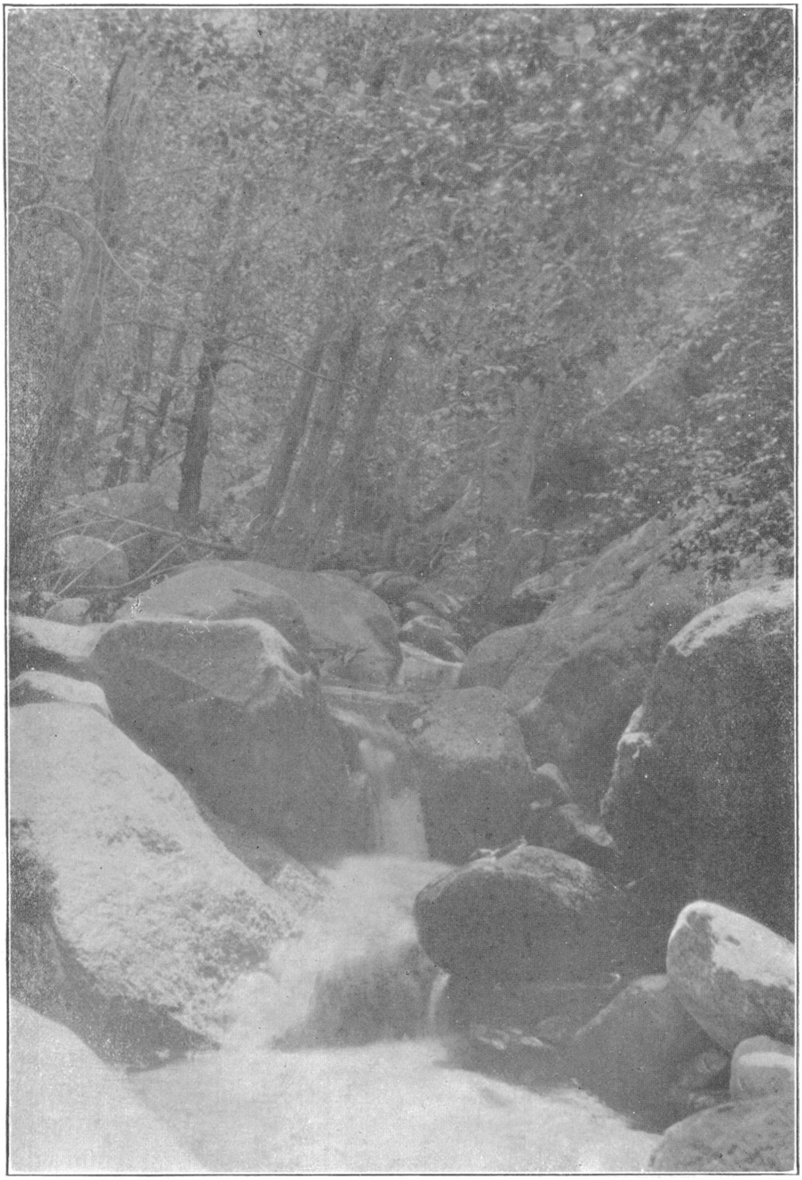
CROSSING THE SABINE RIVER, with keen anticipation we set forth at last on the soil of Texas.

the moths were largely ruined with that treatment. Some time I hope some *Lachnosterna* enthusiast may have the pleasure of rejoicing over his part of our nocturnal catches, and it will be no small share.

At Auburn, Alabama, we had a most delightful visit with Dr. J. W. Robbins, professor of botany in the Agricultural College. There was very good collecting on the flowers of *Ceanothus americanus* and of *Asclepias tuberosa.* In the trap lantern catch a prize appeared, a moth of a species which has subsequently been described by Barnes and McDunnough as *Lithacodia indeterminata;* also *Eois demissaria,* a good geometer.

South of Montgomery the road led through a wilderness that would delight one's heart. Perhaps the best of it was where we camped the night of June 11, two miles south of Leroy on a small stream flowing into the Tombigbee River. We had left the rolling red clay hills of the Piedmont Plateau behind us, and were in the sandy, piney woods of the coastal plain. A very sandy approach to an old negro church offered a good spot to pitch camp. To my great delight I soon found that this sand was the home of great quantities of Mutillidæ, which I spent all available time in collecting, males and females. *Calopteryx apicalis* lent a touch of tropical brilliancy to the foliage along the clear stream of black water, water the color of strong black tea. After supper we could not resist the lure of this stream with its sandy banks, and several of us had a fine swim; also washed our clothes. *Diachlorus femoratus,* the "yellow fly," was abundant and bloodthirsty, a perfect nuisance when bathing in the river. The spot was rich in horse flies: *Tabanus americanus* and *T. flavus,* the last-named species on the wooden walls of a house and in the tents in the morning. The trap lantern caught some fine crambids: *Raphiptera minimella* Robinson and *Iesta lisetta* Dyer. The previous night at Flatwood, we took *Diallagma lutea* Smith, representing a genus of Noctuidæ, hitherto unrepresented in the collection of Cornell University.

The Buick had now developed another broken spring, and was obliged to hobble along as far as New Orleans with one side propped up on timbers. Some day you may ask Mr. Shannon how it felt, riding over that wheel across the chuck holes of Mississippi. At Mobile we turned west along the Gulf, camping near Theodore. Here an interested lad of the region offered to guide some of us to "a fine swimming hole." *En route,* stimulated doubtless by the unusual features of our



Post Cañon in the Pinaleno Mountains. The charm of the forest-clad cañons and the upper slopes of these desert mountain ranges, so arid looking from below, is one of the desert's most charming surprises.

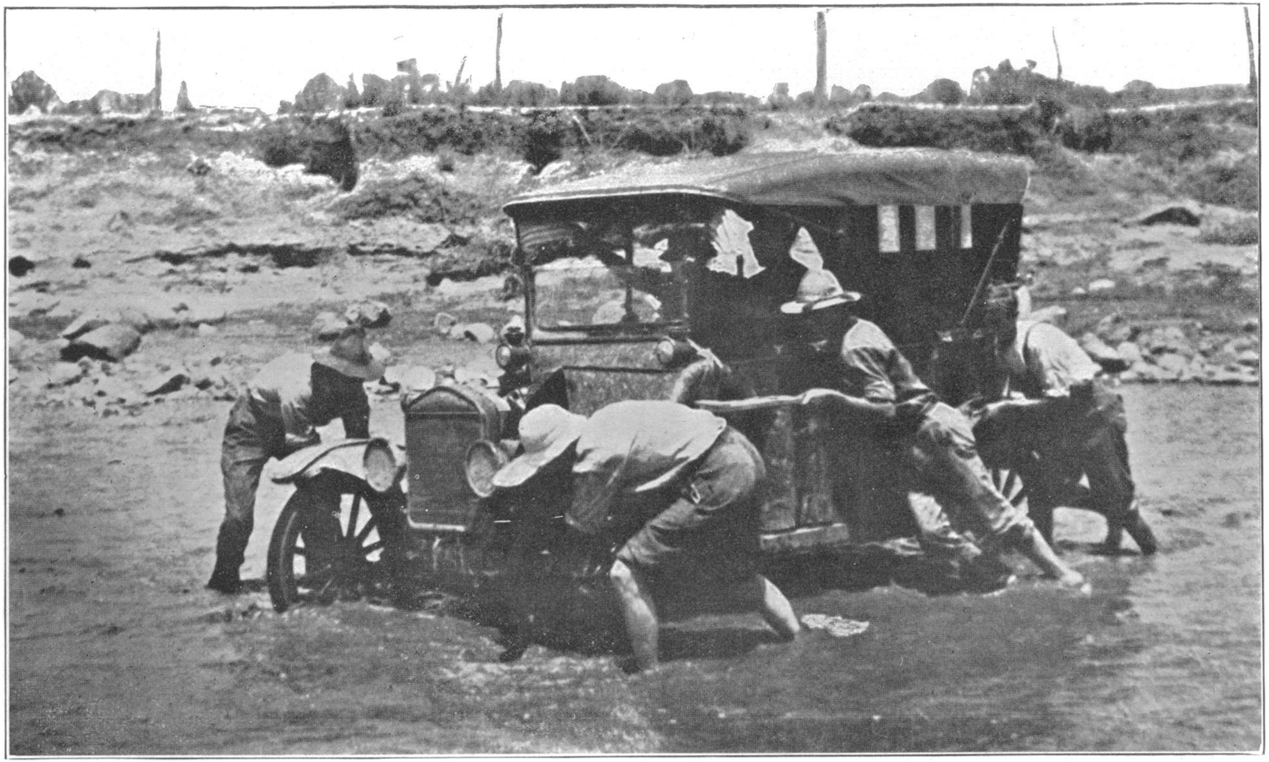
pursuits, he expounded upon philosophy in the following fatalistic words: "Live and larn, then die and fergit it all." But he was evidently less of a swimmer than philosopher, for the "swimmin' hole that us kids all goes in" was at most 15 inches deep and fifteen feet in diameter!

Across the road from our camp, some peculiar alligator-like grunts proved to be emanating from the southern bullfrog, *Rana grylio.* This species was described only about fifteen years ago. Its note is altogether different from that of our northern species.

Beyond Biloxi we camped on the beach, and wading out at dusk, kept going and going and going, and still the water was less than waist deep. We had gone out a quarter of a mile or more, when slowly, gracefully, between us and the shore, rose up and turned under, a great, huge fin! If the ichthyologist hadn't been along we might have said a shark, but he insists it was a porpoise, so in the interests of scientific accuracy we'll let it go at that. Here the trap lantern yielded *Hypenopsis macula,* a genus and species of Noctuidæ of uncertain relations, not represented in the university collections, a pyralid of the genus *Patissa,* subfamily Schœnobiinæ, that is probably undescribed and four specimens of a crambid with erratic venation and wing-form which Dr. Forbes believes represents a new genus. Another very interesting catch was *Diatræa evanescens,* described by Dr. Dyar as new to science at about the very time of our trip. This species we again caught at Schriever, Louisiana, and Richmond, Texas.

Crossing the Pearl River by ferry into the state of Louisiana, we lunched, June 15, near its west bank. Here is a typical bottom land, with cypress, black gum and other trees festooned by the great hanging llanos of bullace. Just the spot we thought for *Chlorippe,* so Paul Needham and I set off in search. We did not find any, but Paul did find our first *Thecla halesus.* Those who have seen this magnificent butterfly in the field will appreciate his abandoned delight. Surely we have in this country no more beautiful creature, with its brilliant azure wings and rapid darting flight. We also found on the cypress trees specimens of a beautiful new membracid, both here and again the following day at Colyell. Dr. Funkhouser has subsequently described them as *Stictolobus trilineatus.*

At Covington, Louisiana, we left the two Fords and the trailer to cross over some very wild country to Donaldsonville on the Mississippi River, while the Buick ferried across Lake



ONE OF THE FORDS. The streams of the desert rise with surprising swiftness after a rain, but drop again quite as suddenly.

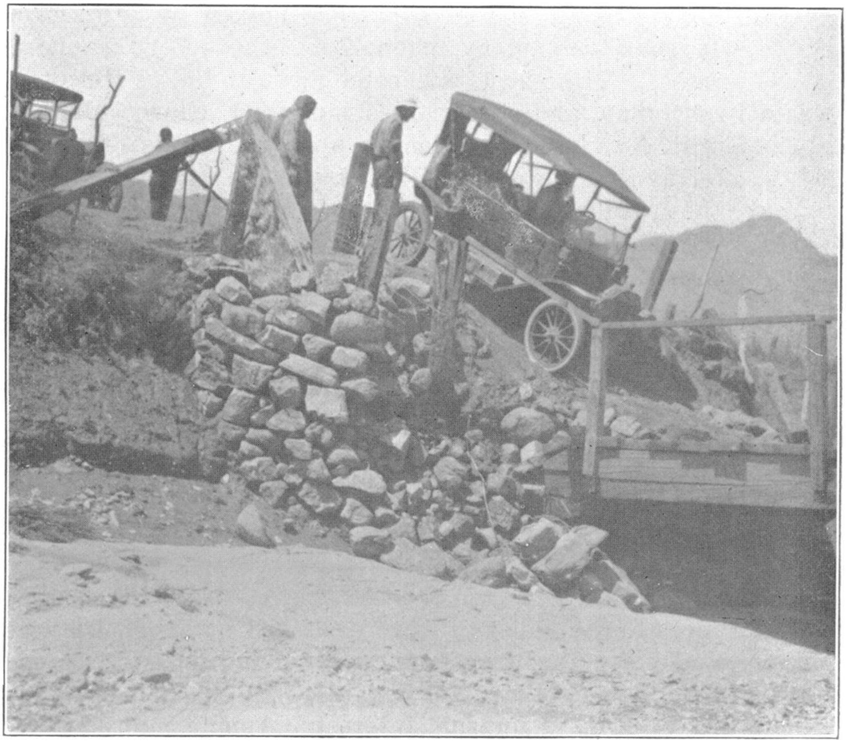
Ponchartrain into New Orleans to have put in a new spring. This accomplished, we rejoined the Fords and started west from the river, June 17. The Fords had had some rough going, through dried-out cypress swamps, and the folks had had an interesting experience with moonshiners. Evidently the zoologists found good collecting, too, as it evidenced by the following passage from Paul Needham's diary:

> Ate dinner by a little stream, and it was here Dr. Wright went crazy. He drew a seine in it and caught everything he was after. He was chasing around, grabbing snakes, turtles, crayfish and frogs. In his great joy he heaved my net into the creek, and beat it away, yelling, after another snake. . . . Mrs. Wright had called dinner, but no dinner for him. He was giving orders, chasing snakes, catching frogs and so on. He ate his dinner on the way in the car.

That, multiplied by several, is not a bad picture of many of our noon-day stops. We always tried to pick out a favorable spot, and then after a hurried meal, devoted a specified amount of time to collecting. Invariably we made good and often exciting discoveries. Each man, working for his special group, would just be finding things of the greatest interest when honk-honk would go the horns and we would have to be off.

At Schriever, Louisiana, the trap lantern yielded some interesting species, among which may be mentioned two beautiful specimens of *Lophosis labeculata*, a crimson geometer with yellow border starred in Dyar's list as lacking in the U. S. National Museum; *Menopsimus caducus* Grote, probably our smallest noctuid, if indeed it is truly one at all, originally described from New Hampshire and here rather out of its known range; the female of a new species representing a new genus of herminiid deltoid (Noctuidæ) of which we were to take the male a few nights later; the species looks like a geometer. We also took *Chloropteryx tepperaria* Hulst, a fine geometer of neotropical affinities, the only species of its genus and previously represented in the university collection by a mere fragment; moreover, Dyar's list indicates that it was not represented at all in the National Museum. *Ampelopsis arborea* yielded good returns of Hymenoptera.

At Berwick we watched a shrimp catcher at his work, but found a backyard full of mink far more interesting. The owner took us in and they certainly were fascinating to watch. They crawled about over everything, and were particularly fond of climbing along the roof of an old shed, peering over the edge and watching one with their tiny black eyes. Here we caught the only North American endotrichid, *Neodavisia singularis* B. and McD. recently described from Florida.



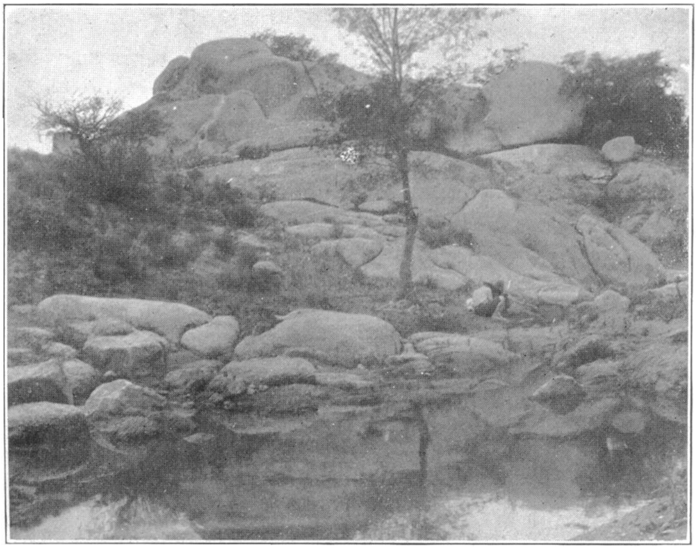
UPS AND DOWNS NORTH OF PHŒNIX, ARIZONA.

From New Iberia we drove out to Avery Island, a bird sanctuary owned by Mr. McIlhenny. Here a heronry, tenanted by thousands of birds of several species, was a most interesting sight. There were numerous nests with young of various stages, upon which Mr. Shannon was very anxious to discover some Hippoboscidæ, but he had no success.

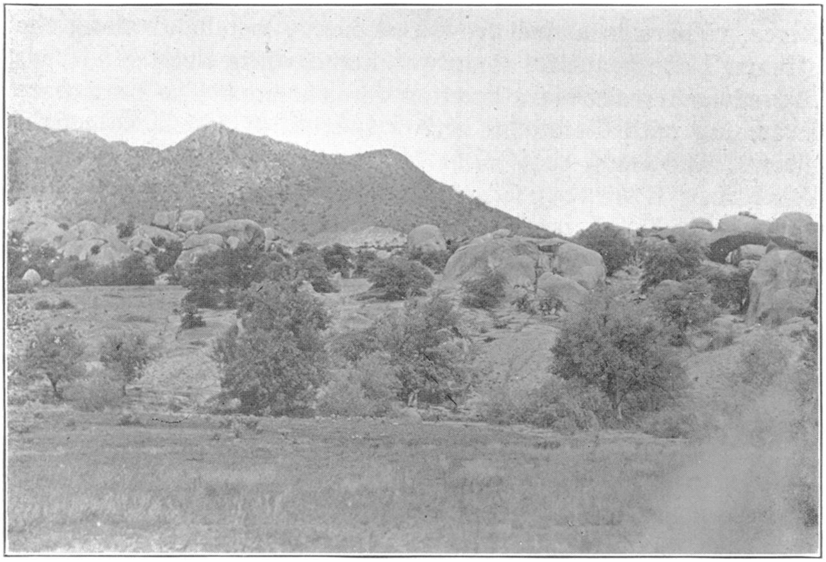
Much of Louisiana we found quite different from other communities. The French villages and planters, the great sugar plantations and the rice fields were novel to our experience. The never ending road took on new turns and twists, and especially endless right angle jogs through the interminable cane fields. In the villages, as main-and-only-street, it became the playground of swarms of children and domestic or semi-domestic animals and along it daily at four in the afternoon commenced the promenade of multitudinous hens. I suppose all autoists have noticed this habit of our domestic fowls to swarm forth on to the road for a sociable time as the afternoon begins to wane. In this particular region the custom seemed to have become established as chief social event of the chickenry and was even participated in by the hogs and the dogs.

Our night's camp was in a pasture hidden by a massive hedge. It contained many patches of the most beautiful cherokee roses. Mine host, who came down to bid us welcome, was a Frenchman, and a very serious-minded fellow. He discoursed with Mr. Lobdell at length upon the ethics of hospitality, offering it as his opinion that it was one's Christian duty to make the traveller welcome.

The following night our camp was quite without a parallel. Approaching the Sabine River the road was built up for several miles across the most splendid cat-tail marsh. We had several close-up views of some Florida gallinules, and also saw an alligator. A dozen rods before we came to the river at the ferry was a tiny elevated spot with a few trees around it, to one side of the road. Here we camped, while the mosquitoes made merry. Next morning, before starting, Dr. Bequaert and myself found excellent collecting on several kinds of flowers in the swamp and along the road. These were being visited by several kinds of bees. One fine large black species, *Emphor bombiformis,* was nesting in the black level clay of the road; the entrances to the galleries were protected by short, vertical chimneys of clay; the bees were visiting flowers of *Hibiscus oculiroseus.* During the night the trap lantern had been accumulating a catch of unusual interest. Among many others may especially be mentioned the following: *Celama sorghiella,* a nolid moth not represented in the Cornell University collection; the male of the undescribed genus and species of



TEXAS PASS.



TEXAS PASS, DRAGOON MTS., ARIZONA. In this spot, suggestive of the Garden of the Gods in its fantastic rocks, we found many interesting species, some of the most notable being *Amblychila baroni,* and a large series of *Crioprosopus magnificus.*

noctuid of which we had taken a female at Schriever; a tineid near *Opogona* probably undescribed, and without close relatives in this country; a female of the enormous Pyralid, *Schœnobius maximellus,* and a series of the somewhat smaller, *S. sordidellus; Eoreuma densellus* Zeller, a crambid; *Ozarba æria;* three noctuids, *Arzama densa, Cobubatha luxuriosa* Sm. and *Tetanolita floridana.* This last is listed as occurring in Florida and Texas. We took it at localities all the way from Virginia to here, but not farther west.

Crossing the Sabine River, we entered Texas June 21, twelve days behind the schedule which we had outlined for the trip. We were all very enthusiastic, for from now on the collecting might be expected to yield the most interesting possible results. Ahead lay the deserts and arid waste lands. The car drivers looked forward to new experiences in driving over roads which must be very different from those of their previous experience and all were impatient for the transition from the humid country to the arid.

At Devers where we spent the night, the trap lantern collected our first specimens of a not uncommon Texan lithosiid: *Comacla simplex* Walker, which however represented a genus and species new to the university collections. We subsequently took the species at several localities.

We lunched on the twenty-second along the San Jacinto River. There is a fine growth of heavy woodland along the stream. The beautiful clear water and white clean sand bars proved an irresistible attraction for a swim. The bars were swarming with Cicindelas of two species, of which we caught many. The camp that night on an embankment overlooking the Brazos River, opposite the town of Richmond was, entomologically, an unusually fine one. Dr. Bequaert and myself had been long impatient to find the first male nocturnal Mutillas. This group of Mutillidæ is very abundant in the southwest, but with the exception of two species, is unknown from east of Texas. The two more easterly forms have been taken very rarely (both by the writer) in Georgia and one in Alabama. We were not so fortunate as to take either of these species this trip, but here, almost our very first night in Texas, we took one of the western forms and also males of a large species of *Eciton,* one of the legionary ants. *Comacla simplex* and *Diatræa evanescens* were also in the catch again. The next morning, along the river, collecting was very good, especially for Mutillidæ and aculeate Hymenoptera. Butterflies of several interesting species were also abundant. Within a few feet of our tents we caught two copperheads, and in knocking a log to pieces to get one of them, found any quantity of a fine steel blue pentatomid, *Proxys punctulatus* (P. B.).

Opposite Wharton on the Colorado River we had a real sensation. We were encamped in an open grove overlooking the river, very busy collecting, amongst other things, the Mutillidæ which were especially abundant here, when lo and behold! a herd of zebus came slowly toward us, stopping to graze and apparently not at all surprised or interested in *us,* though you may imagine that we certainly were in them. What magnificent creatures they are, when at large. It seems that we were encamped in the pasture land of a very progressive stock farm, the owner of which, not content with the more ordinary kinds of cattle, had imported these Indian beasts.

Of the several species of *Mutilla* found here, *orcus* was the most conspicuous, a truly western species. *Comacla simplex,* the lithosiid, was again in the trap lantern, as was *Cobubatha quadrifera.* Knight found the following Cicadidæ: *Tibicen pruinosa, marginalis, superba, viridifascia.* At Victoria we collected *Eresia texana,* not previously in the university collections. There the trap lantern again did good work. Notable among the captures were: *Eubolina impartialis* Harvey, a Texan noctuid not represented in the university collection, nor even its genus; a crambid of the genus *Thaumatopsis; Tamarrha delliella* Fernald, *Macrotheca flexilinealis* Dyar, a recently described species representing a subfamily of Pyralidæ erected by Barnes and McDunnough, related to Galleriinæ. We took this at New Braunfels and had taken it previously at Wharton. The same is true of *Cobubatha quadrifera* which was also in the catch. A horned toad, the common *Phrynosoma cornutum,* the first that we had seen, was a decided reminder that we were close upon the truly arid regions.

From Victoria northwestward, we travelled along the dividing line, as drawn by Bailey, between the austroriparian and sonoran life zones, that is to say, between the humid and arid divisions of the lower austral. We continually passed extensive undergrowths of mesquite, often miniature forests. Sometimes when this was in flower, it attracted numbers of *Pepsis* and other Hymenoptera. Camping in one of these thickets we were delighted to find a cactus wren building near at hand. Interesting sounds from the mesquite led us to a still hunt for Orthoptera after dark with flashlights, but the singers were exceedingly wary and we had little success. During the night the trap lantern caught: *Yrias crudelis* Grote, a genus and species of Noctuidæ new to the University collection; *Eublemma obliqualis,* a species of noctuid not recognized from the United States when Dyar's list was issued; and *Illice unifascia. Ozonadia tenuifascia,* specimens of which we collected the preceding night at Victoria, was until recently supposed to be a variety of this pretty little lithosiid.

Here for the first time we captured one of the whip-tailed lizards, characteristic species of the open desert, and of which we subsequently found many specimens of four species. The one here was *Cnemidophorus gularis.* Here as at Victoria were many Cicadidæ of a species ordinarily identified as *Pacarina signifera* Walker; another species, *Tibicen marginalis,* also occurred at Victoria and *T. superba* at Sutherland Springs near here. At the last-mentioned locality we also found the little erycinid butterfly, *Calephelis perditalis,* which at the time we collected was still new to science, and the large longicorn *Stenaspis solitaria.*

(*To be continued*)